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NEW JAPANESE MARINE, LAND AND FRESH-WATER MOLLUSCA.

BY HENRY A. PILSBRY.

The present paper continues the description of new species of mollusks discovered by Mr. Y. Hirase. I have taken this opportunity to illustrate the Japanese marine shells described in a former communication.¹

PLEUROTOMIDÆ.

Daphnella fragilis var. *articulata* nov. Pl. XXI, fig. 26.

General form of *D. fragilis* (Rve.) or *D. lymnæformis* (Kien.). Apical two whorls smooth; several whorls following sculptured with unequal spiral cords, as coarse as those on the last whorl, densely crenulate or beaded by close fine longitudinal laminae, much less prominent and closer than the spirals. Last whorl densely and evenly latticed by alternately larger and smaller spiral cords intersecting scarcely less prominent, but rather closer, longitudinal rib-striae. Pale brown, every fourth cord marked with brown in narrow lines along the cord, alternating with diffused white spots; a row of alternately brown and white squarish spots below the suture; the early whorls brown. Aperture smooth within, the outer lip thin, regularly arcuate, rather strongly retracted above. Length 19, diam. 7, largest axis of aperture 11 mm.

Hirado, Hizen, in western Kiusiu (Mr. Y. Hirase, No. 903), types No. 80,634 Coll. A. N. S. P.; Kamakura, just below Tokyo Bay, on the eastern side of Hondo (Acad. Coll.).

Mr. Tryon has lumped several totally distinct species under *D. lymnæformis*, but the form so called by Kiener is less plump than *articulata*, with even, close spirals and inconspicuous longitudinal sculpture on the last whorl, while the spire has comparatively strong costae and rather coarse spirals. The color, well shown in Kiener's figure, is whitish, with tawny, waved and anastomosing longitudinal stripes. *D. fragilis* has not yet, to my knowledge,

¹ These *Proceedings*, p. 193.

been adequately defined; but the form I have considered to be that species has a small, elevated nucleus of $2\frac{1}{2}$ whorls, followed by about three costate whorls, the ribs crossed by two or three coarse spiral cords; after which the sculpture becomes comparatively fine. If I am correct in this identification, then *articulata* is a distinct species; but as Hedley has lately hinted, many of the more critical or difficult species of the "London School" of conchologists, of which A. Adams and Reeve were shining lights, can be identified with certainty only by visiting the British Museum.² Under the circumstances I subordinate my form from Japan to *D. fragilis* as a variety, content to have a name for this well-marked shell, evidently of wide distribution in Japanese waters.

D. supercostata of E. A. Smith seems, from a specimen before me, to belong near *fragilis*, though clearly distinct in both form and sculpture. *D. ornata* Hinds from New Guinea is evidently allied, though with a different color-pattern.

MITRIDÆ.

Mitra (*Costellaria*) *hizenensis* n. sp. Pl. XXI, fig. 31.

Shell slender, solid, dusky olive, with a brown or orange-brown and rather prominent subsutural line and an ill-defined white zone at the shoulder, in which the summits of the ribs are transversely marked with short scattered brown lines; the narrow portion of the base is pale yellow, with brown spots and dots. Surface rather glossy, sculptured with rounded longitudinal ribs, nearly or quite as wide as their intervals, 13 or 14 in number on the penultimate whorl, becoming gradually weaker below the periphery of the last whorl, and in adults obsolete toward the aperture; the concave intervals crossed by very low, flat spirals, rather wider than the shallow, oblong pits between them, and about 6 in number on the penultimate whorl. The last whorl is attenuated below, and has a number of large spiral ribs and small cords and striæ, the largest rib continuous with the upper columellar plait. Whorls about 9; apex dark. Aperture small, dark purple-brown within, the lip thin, white-bordered, multirate inside. Columella with four simple plaits. Length 14.5, diam. 5, longest axis of aperture 7.5 mm.; length 17, diam. 6.5 mm.

² Or by imposing upon the present custodian of the collection of Mollusca, whose good nature is admitted to be well-nigh inexhaustible.

Hirado, Hizen, western Kiusiu (Mr. Y. Hirase). Types No. 80,475 Coll. A. N. S. P., from 688a of Mr. Hirase's collection.

Near *M. fuscoapicata* E. A. Smith, but it has more and shallower spiral sulci in the intervals between the ribs, which are fewer in number; it is smaller, the upper two plaits of the columella are not grooved, and the coloration is somewhat different. *M. gotoensis* and *M. collinsoni* have more numerous ribs. In adult specimens of *M. hizenensis* the latter third of the last whorl is smooth, the costæ disappearing.

Mitra (Costellaria) vanattai n. sp. Pl. XXI, fig. 28.

Shell rather slender, solid, brownish-olive, with a wide dark-brown band below the periphery, and a light brown line at the shoulder, the base brown. Surface rather glossy, sculptured with rounded longitudinal ribs, as wide as the smooth concave intervals, 14 in number on the penultimate whorl, obsolete on the latter half of the last whorl; the attenuated base sculptured with spiral cords, the largest continuous with the upper plait of the columella, those below it (about 4) progressively smaller; a few small spirals above the large cord. Whorls remaining 8 (the apex being eroded), somewhat convex. Aperture bluish and finely lirate deep within, purple brown toward the white-bordered thin lip. Columella with 5 plaits, the upper strong, not grooved. Length 17, diam. 7, longest axis of aperture 8 mm.

Hirado, Hizen (Mr. Y. Hirase). Types No. 80,476, from 688b of Mr. Hirase's collection.

This species was sent with the preceding, from which it is easily separated by the want of spiral sculpture between the ribs. Somewhat allied to *M. semisculpta*, but it differs in the smooth intervals. *M. analogica* Reeve has fewer plaits, according to the description.

MURICIDÆ.

Tritonidea submenkeana n. sp. Pl. XXI, fig. 24.

Shell short-fusiform, very solid and strong. Sculptured with longitudinal ribs, 12 to 15 in number on the last whorl, the last rib very much larger, forming a large, swollen varix behind the lip; crossed by spiral cords which are low in the intercostal spaces but rise and widen into transverse, oblong, glossy tubercles where they cross the ribs; the penultimate and earlier whorls having

three such spiral cords, the last whorl with ten (counted just behind the outer lip); the intervals between the spiral cords everywhere densely, finely striate. Surface lustreless, black, the intervals between ribs and a peripheral belt largely white; the tubercles of the subsutural cord are mostly brown, the others chiefly black. Whorls about 8, but slightly convex, the spire being rather straightly conic; last whorl impressed below the suture, concave below the periphery, produced and spirally striated anteriorly. Aperture less than half the length of the shell, blue-white inside, the lip beveled, with a brown spot at the termination of each spiral cord, thickened within and contracted by six rounded teeth, the upper one more widely separated than the others, the second from above largest. Columellar margin concave above with a pliciform tooth near the posterior angle, straightened and rather wide below, bearing five or six transverse tubercles. Length 15, diam. 7, longest axis of aperture 7.5 mm.

Hirado, Hizen, western Kiusiu (Mr. Y. Hirase). Types No. 80,538 Coll. A. N. S., from 1,037 of Mr. Hirase's collection.

This little black-and-white species groups with *T. menkeana* Dkr., a shorter shell with similar coloration. The unusual prominence of the tubercles on the columellar lip, and the sculpture of ribs tuberculate at the intersections of spiral cords, give it much the appearance of a *Sistrum*.

PURPURA.

The *luteostoma* group of *Purpura* was too much lumped in my Catalogue of Japanese Marine Mollusks. From a renewed study of them, with much more material, it seems that the following four Japanese forms are recognizable: *P. luteostoma* (Chemn.) Dillwyn, *P. bronni* Dkr., *P. clavigera* Küster, *P. tumulosa* var. *problematica* Baker (= *tumulosa* Lischke not Reeve). I formerly followed Mr. E. A. Smith³ in referring the latter to *P. alveolata* Reeve; but I am now convinced that *alveolata* is, as Reeve stated, a Panamic species. We have specimens from Panama in our collection exactly like his figure.

Mr. Hirase sends the Californian species *P. saxicola* Val. from Kisennuma, Rikuzen, on the east coast of Hondo.

³ *P. Z. S.*, 1879.

Euthria hokkaidonis n. sp. Pl. XIX, fig. 17.

Shell slender, fusiform, moderately solid, yellowish or purplish ashen. Surface lustreless, sculptured with slightly oblique longitudinal rounded folds as wide as their intervals, 13 or 14 in number on the penultimate whorl, wanting on the base of the last whorl, where they disappear just below the periphery; crossed by spiral cords alternating with threads or striæ, of which there are usually two in each interval; the coarser cords about 5 in number on the whorls of the spire, slightly widening as they cross the longitudinal folds; the spirals alone developed on the base. Spire high; whorls about 9, very convex, separated by deep sutures; the last whorl concave below, produced in a slender, somewhat recurved rostrum; siphonal ridge convex. Aperture small, ovate, acuminate above, livid dull purple inside, with 8 to 10 acute folds within the thin-edged outer lip; canal short and open.

Length 22, diam. 8.5, length of aperture 10 mm.

Length 22, diam. 8, length of aperture 9 mm.

Nakauta, prov. Teshio, Hokkaido (Mr. Y. Hirase). Types No. 80,394, from No. 102 of Mr. Hirase's collection.

Apparently related to *E. fuscolabiata* E. A. Smith, from which it differs conspicuously in the much more slender figure.

COLUMBELLIDÆ.

Columbella misera Sowerby. Pl. XXI, figs. 37, 38.

C. miser Sowb., Thes. Conch., I, p. 129 *bis*, Pl. 38, fig. 111.

This species is figured to illustrate its difference from the following. It was taken in some numbers at Kamakura, province Sagami (below the mouth of Tokyo Bay), by Mr. Frederick Stearns. It is very strongly ribbed, especially on the spire, the ribs being about half the width of the interstices, about 11 or 12 in number on the penultimate whorl, or on the last, when they are not obsolete on its latter part, which is frequently the case. On the front of the last whorl these ribs extend well over the periphery, but they become much shorter on its latter half, or wholly obsolete. The base is sculptured with coarse spiral cords, which become increasingly weaker and obsolete as they approach the periphery. *Color white, with one or two dark brown spots on each rib and a checkered striped basal zone; the back of the last whorl irregularly striped or reticulate; a white zone, usually brown-dotted on each rib, re-*

volved below the suture. The form varies widely. Alt. 11, diam. 5.2 mm; alt. 12, diam. 6 mm.

Figured specimens are No. 70,765 Coll. A. N. S. P., from Kamakura, Sagami.

Columbella misera var. *polynyma* Pils. Pl. XXI, fig. 39.

This vol., p. 196. Types No. 80,556 Coll. A. N. S. P., from No. 1,097 of Mr. Hirase's collection. Study of more specimens causes me to doubt whether the characters of this form are constantly different enough from *misera* to require specific rank. The following variety connects them to some extent.

Columbella misera var. *californica* Reeve. Pl. XXI, fig. 36.

Columbella californica Reeve, Conch. Icon., VI, fig. 165 (1859). Kobelt, Conchyl. Cab., p. 59, Pl. 8, figs. 3, 4. Not *C. californiana* Gaskoin, P. Z. S., 1851, p. 12.

Specimens agreeing exactly with Reeve's figure were taken by Mr. Hirase at Hirado, Hizen. They are larger than *C. misera*, but agree with that in sculpture, except that there are one or two more ribs to a whorl. The coloration is much darker. There is a white subsutural zone pied with black, and a white basal area striped with black-brown; the intermediate space being more or less suffused with rich brown and copiously lineated with black-brown. The ribs are black below the subsutural zone. Whorls over seven. Alt. 13.5, diam. 6.5 mm.; alt. 14, diam. 6 mm.

Prof. von Martens has quoted this race as a synonym of his *C. japonica*, but I think incorrectly. It is much nearer the true *misera*, and in my opinion is a southern variety of that species. The name given by Reeve is unfortunate, as it is not a Californian species. The specimen figured is No. 80,597 Coll. A. N. S. P., from No. 1,230 of Mr. Hirase's collection.

C. misera inhabits the ocean coast of Hondo; *C. misera* var. *polynyma* the opposite shore of the same island, and both *C. misera* var. *polynyma* and *C. misera* var. *californica* occur in southwestern Kiusiu.

FASCIOLARIIDÆ.

Peristernia ustulata var. *luchuana* Pils. Pl. XIX, fig. 18.

See p. 197. Type is No. 80,418 Coll. A. N. S. P., from No. 298 of Mr. Hirase's collection.

P. crocea Gray, *scabrosa* Reeve, *xanthostoma* Nutt. and va-

rious other forms of the Polynesian *chlorostoma* Sowb. are all markedly shorter shells. The variety of *scabrosa* figured by Kobelt (Conchyl. Cab. *Turbinella*, Pl. 23, f. 4, p. 96) may possibly be the same, but it is nameless.

BUCCINIDÆ.

Chrysodomus intersculptus var. *frater* Pils. Pl. XX, fig. 21.

See p. 197. Type is No. 80,379 Coll. A. N. S. P., from No. 59 of Mr. Hirase's collection.

Buccinum Hirasei n. sp. Pl. XX, fig. 22.

Shell solid, turreted, partly covered with an olive-brown cuticle; composed of about 8 whorls, which are convex at the periphery, contracted below, and channeled above; the channel rather wide, flat, bounded by a strongly elevated, slightly uneven carina. Sculpture of faint growth-lines and a few low spiral cords, hardly noticeable on the last whorl. Aperture slightly ovate, angular at the termination of the carina, the basal notch not very deep. Outer lip smooth, not thickened, somewhat expanded. Operculum unknown.

Length 104, diam. 43, longest axis of aperture 37 mm.

Kizennuma, Rikuzen (Mr. Y. Hirase, No. 55*b*).

This magnificent species is known to me by the single specimen figured, which was collected dead. The outer lip is broken above the middle, so that its true outline in that part is not given in the figure. The cuticle has nearly all been lost, and the shell is overgrown with *Polyzoa*, *Spirorbis*, etc.

The conspicuous channel at the suture is formed almost exactly like that of *Chrysodomus pericochlion* (Schrenk), a species occurring with *B. Hirasei* at Kizennuma. The similarity is so great that I have figured Schrenk's species for comparison.

Chrysodomus pericochlion (Schrenk). Pl. XX, fig. 23.

The specimen here figured is longer and less inflated than the original type of the species as figured by Schrenk. The dark olive cuticle, wanting from the base of the shell, resembles that of *Buccinum Hirasei*, and reminds one of the cuticle of such freshwater snails as *Viviparus* or *Campeloma*.

CERITHIIDÆ.

CLAVA Martyn.

This genus has been used to cover certain species formerly referred to *Potamides*, by Jousseume in 1884,⁴ and by Dollfus and Dautzenberg in 1899,⁵ and for the group long known as *Vertagus* by Dall in 1892.⁶ The latter usage I find to be correct. In the first volume of the *Universal Conchology* Martyn introduces *Clava* for the *Cerithiidae* known to him—a group which had previously been referred to *Murex* by Linnæus. He gives the following species:

Clava rugata Martyn (= *Cerithium lineatum* Lam.).

Clava herculea Martyn (= *Cerithium ebeninum* Brug.).

Clava maculata Martyn (= *Cerithium maculosum* auct.).

Clava rubus Martyn (= *Cerithium echinatum* Lam.).

In following volumes of the same work, Martyn adds still other forms of *Clava*. But it is obvious that a type for the genus must be selected from species contained in his first volume. Now the *C. herculea* of his list was made type of the genus *Pyrazus* by Montfort in 1810,⁷ under the name *Pyrazus baudini* Montf. *C. rubus* falls into *Cerithium* as now restricted.⁸ This leaves *C. maculata*⁹ and *C. rugata* to bear the name *Clava*. The two species are not closely related, and the latter may be considered type of Martyn's genus. The name *Vertagus*, used for this group by many authors, had no standing in binomial nomenclature until long after the foundation of *Clava*.

⁴ *Bull. Soc. Zool. de France*, IX, 1884, p. 191.

⁵ *Journ. de Conchyl.*, 1899, p. 2.

⁶ *Trans. Wagner Free Institute of Science*, III, p. 290.

⁷ *Conch. Syst.*, II, pp. 458, 459.

⁸ *Cerithium* was established by Bruguiere to contain species of *Vertagus* and *Potamides* of authors, as well as the forms to which it is now restricted.

Clava rubus of Martyn is the well-known *Cerithium echinatum* of Lamarck, which name it must replace. It is not the *Cerithium rubus* of English monographers or of Tryon, who followed their error. Kobelt, in his monograph in the new edition of Chemnitz's *Conchylien Cabinet*, p. 213, quotes "*C. rubus* Pilsbry, *Manual*, IX, p. 103, Pl. 23, fig. 9," as a synonym of *C. serratum* Wood. I was not responsible for volume IX of the *Manual*, my work beginning in volume X. With a "?" he also quotes "*Clavus rubus* Martyn." But Martyn's *Clava rubus* was a totally different shell, the *C. echinatum* of authors, a common Polynesian species. The failure on the part of monographers to recognize this fact was due to want of care; neither the *Universal Conchology* nor Chenu's reprint have been consulted by them.

⁹ *C. maculata* is the "*C. maculosum*" of English monographers and of Tryon; another curious error.

No species of the type proposed by Dr. Jousseaume and Messrs. Dollfus and Dautzenberg was contained in Martyn's original list. Their use of the name *Clava* is therefore without proper foundation, while Dall's course is clearly supported by the evidence of Martyn's original work.

The *Vertagus pfefferi* of Dunker is not a *Vertagus* or *Clava*, but a true *Cerithium*, which I have received from Hirado, prov. Hizen, Japan (collected by Mr. Hirase), and from Hong Kong (B. Schmacker). It is very close to *C. granosum* Kiener (not of Searles Wood, 1848), which was described from the Red Sea, and has been reported by Lischke (*Jap. Meeres-Conchyl.*, I, p. 68) from Nagasaki. *C. mitræforme* Sowb. seems to differ but little, if at all, and *C. eximium* Sowb. and *rubus* of Sowerby and Tryon¹⁰ may be the same thing. As there is great uncertainty about the species of Kiener and Sowerby, I prefer to use the name given by Dunker, based upon Japanese specimens, and with a good description and figures, for the Japanese form.

Cerithium chemnitzianum n. sp. Pl. XIX, figs. 14, 15.

Shell oblong-conic, strong, pale yellow, sparsely maculate and densely dotted with rich brown. Sculptured with many very low spiral cords which are weakly granose, the grains irregularly alternating brown and white; the upper two cords with stronger grains. There are about 10 of these cords on the latter part of the last whorl, 4 on the penultimate, and 3 on each of the earlier whorls. The intervals between cords are densely striate spirally, the striæ usually very unequal, a median one generally larger, sometimes nearly as large as the primary cords, and brown-dotted. Outlines of the spire convex below, becoming straight above. Whorls remaining 8 (the apex being eroded), the upper ones flattened, the last three somewhat convex just below the sutures, the last whorl having a very strong, tumid, oblique varix on the back, and another less elevated one strengthening the outer lip. Aperture slightly oblique, the base being a little advanced, white within; outer lip strongly arched, almost forming a semicircle. Columellar

¹⁰ That the English monographers and Tryon should have identified this small species as Martyn's *Clava rubus* is inexplicable. *Murex serratus* of Wood, in the *Index Testaceologicus*, Pl. 28, fig. 158, is a much reduced and poor figure of the true *C. rubus* Martyn; but *C. serratum* of the English and German monographs is quite another thing.

lip calloused, bearing a strong entering callous ridge above. Canal very short, deep and narrow.

Length 27, diam. 13.5, longest axis of aperture 11.5 mm.

Length 29, diam. 14, longest axis of aperture 11.5 mm.

Loo Choo Islands (Mr. Y. Hirase). Types No. 80,631 Coll. A. N. S. P., from No. 279 of Mr. Hirase's collection.

The sculpture is much more feeble than in *C. morus* or its immediate allies, though some forms referable to *morus* resemble this species in form.

The figure of *C. janellii* var. in the zoology of the *Astrolabe et Zélée*, *Atlas*, Pl. 24, fig. 22, resembles *C. chemnitzianum* somewhat, but differs in the plicate spire. In the monographs by Reeve, Tryon and Kobelt I fail to find anything much like the present species. This shell is named for the author of the most extensive shell iconography of the eighteenth century, a work of utility up to this day. Would that A. Adams, a hundred years later, had defined his species half as well! is one's thought on working with Japanese mollusks.

LITTORINIDÆ.

Echinella cumingi var. *luchuana* Pils. Pl. XIX, fig. 16.

See p. 198. Types are No. 70,962 Coll. A. N. S. P.

This variety resembles *Tectarius spinulosa* Phil. (Abbild. III, *Littorina*, Pl. 6, f. 24), but that is *imperforate*, while this has an open, cylindrical umbilicus.

PYRAMIDELLIDÆ.

Syrnola bacillum n. sp. Pl. XXI, fig. 25.

Shell slender, rod-like, marbled reddish-brown and white, with a narrow band of alternate brown and white spots revolving midway between sutures and on the middle of the upper surface of the last whorl, which has a white peripheral belt; this coloring sometimes very faint. Nuclear whorl standing obliquely on edge, the very short spire inclined downward; subsequent whorls $12\frac{1}{2}$ or 13, flat, separated by deeply cut sutures, sculptured with faint growth-lines and an impressed line revolving below the suture; some very faint spirals showing elsewhere in certain lights. Periphery rounded, the base convex, subperforate. Aperture small, narrowly ovate; columella bearing a single strong fold.

Length 9.7, diam. 2, longest axis of aperture 2 mm.; diam. of the upturned apical whorl .27 mm.

Hirado, Hizen (Mr. Y. Hirase). Types No. 80,605 Coll. A. N. S. P., from No. 1,239 of Mr. Hirase's collection.

A very narrow species, with a particular style of coloration, which at times, however, is very faint. The widely distributed *Syrnola brunnea* also occurs at the same locality. *S. aciculata* A. Ad., of which I have compared specimens from Fiji, is a larger species with more convex whorls.

TURBONILLIDÆ.

Turbonilla varicifera Pils. Pl. XXI, fig. 27.

See p. 198. Types are No. 80,603 Coll. A. N. S. P., from No. 1,238 (part) of Mr. Hirase's collection.

EULIMIDÆ.

Eulima dunkeriana n. sp. Pl. XXI, fig. 30.

A glossy, white, straight species, remarkably thick above, being thus somewhat cylindric. Whorls $9\frac{1}{2}$, a trifle convex, the linear suture being margined below (at least on the upper half of the shell) with a translucent band (sometimes enclosing a white band), one-fourth to one-third the width of the whorl, the lower margin of which, in some lights, looks like the suture itself, though there is no impression at that place. At the last half-whorl there is an impressed varix-line; another in line with it is on the preceding whorl, while the next earlier whorl shows a similar impression somewhat in advance of these. On another specimen about 1 mm. shorter, and evidently not full grown, there is on the last whorl a single varix-line. The aperture is narrowly and acutely ovate; lip simple, a little obtuse. Length 11.2, diam. 2.6, longest axis of the aperture 3.2 mm.

Hirado, Hizen (Mr. Y. Hirase). Types No. 80,637 Coll. A. N. S. P., from No. 1,222 of Mr. Hirase's collection.

Close to *E. philippiana* (Dunker),¹¹ which was taken at Kamakura by Mr. Frederick Stearns; but *E. dunkeriana* differs in the much broader form. *E. philippiana* has not been well figured. A specimen from Kamakura before me has an impressed varix-line near the end of the penultimate whorl, and only falling a little

¹¹ Erroneously referred to the genus *Eulimella* by Dunker.

short of corresponding with the position of the peristome; another on line with it is upon the preceding whorl; the next earlier whorl has a varix-line near its beginning, almost a whorl being thus without a varix. A young shell, 6 mm. long, has one varix-line on the back of the penultimate whorl. *E. philippiana* measures, alt. 10.2, diam. 2.15, longest axis of aperture 2.67 mm. Dunker gives alt. 11, diam. 2 mm. for the type.

Evidently these species have resting stages at irregular intervals, and the varix-lines are inconstant in position and number.

Both of these species are remarkable for the thickness of the upper part of the spire, though this feature is more exaggerated in *E. dunkeriana*.

Eulima luchuana n. sp. Pl. XXI, fig. 2).

Shell white and glossy, conic, curved slightly to the right, that margin being about straight while the left side is a little convex, regularly tapering, $9\frac{1}{2}$ whorls remaining (the apex being decollate), slightly convex, the penultimate whorl having an impressed varix-line at its last sixth, the preceding whorl with one on line with the peristome, the next earlier whorl with a varix-line corresponding in position to that on the penultimate whorl; the varices thus being all on the right or incurved side. Aperture ovate-acuminate, the lip a little obtuse.

Alt. 12, diam. 3.85, longest axis of aperture 4.15 mm.

Loo Choo Islands (Mr. Y. Hirase). Types No. 80,628 Coll. A. N. S. P., from No. 1,275 of Mr. Hirase's collection.

The aperture is longer than in *E. nitidula* A. Ad., which, though a smaller species, is described as having 11 whorls.

Assimineea angustata n. sp.

Shell minute, imperforate, or nearly so, long ovate-conic, solid, red-brown, glossy and smooth. Whorls about $5\frac{1}{2}$, rather flattened, the last one convex. Aperture small, rounded-ovate, oblique; peristome simple, the columellar and parietal margins somewhat thickened. Length 3, diam. 1.7, longest axis of aperture 1.2 mm.

Rishiri, Kitami (Mr. Y. Hirase, No. 1,277 of marine mollusk list).

Unusually lengthened for *Assimineea*, but with the color and texture of that genus, though it may possibly be Rissoid.

NERITIDÆ.

Nerita martensiana n. sp.

Shell globose, small, solid, rather bright sulphur yellow, paler and somewhat mottled with gray or blackish toward the aperture. Surface dull, sculptured with low, rather coarse spiral cords, about 15 on the last whorl, the upper one appressed against the preceding whorl. Spire short, whorls about 3, the last a little depressed below the suture, which is bordered below by a somewhat more prominent cord. Aperture semicircular, yellow or whitish; lip-rib smooth, with a small tubercle above, and another well within near the base of the columella. Columellar area white or yellowish, flat and smooth, the outer border well defined; edge of columella straight, with two or three low, subobsolete teeth, the upper one strongest.

Alt. 10, diam. 9.5 mm.

Loo Choo Islands (Mr. Y. Hirase). Types No. 80,489 Coll. A. N. S. P., from No. 729 of Mr. Hirase's collection.

Small as this species is, the specimens are apparently adult. The smooth columellar area, with well-defined outer margin, weak denticulation and smooth rib within the outer lip are its more prominent characters. I find no species agreeing with these specimens in the monographs, the best of which is that by Prof. von Martens in the new edition of Chemnitz.

Nerita helicinoides var. *tristis* nov.

Shell black with some white spots along the basal margin, and sometimes a few angular pink and white spots elsewhere. Columella three-notched in the middle; area smooth, yellow-tinted in the middle; lip-rib weakly crenulate, a small denticle near its upper end.

Alt. $13\frac{1}{2}$, diam. $11\frac{1}{2}$ mm.

Loo Choo Islands (Mr. Y. Hirase, No. 218). Types No. 80,406 Coll. A. N. S. P.

This variety is like the typical form in the denticulation of columella and lip. In var. *levilabris* Pils. the lip-rib is smooth throughout, and the columellar denticles very weak; these characters being constant in a large number of specimens.

N. helicinoides is apparently closely related to the small form of *N. striata* Burrow described by Prof. von Martens in the new edition of Chemnitz, p. 39, Pl. 7, figs. 19, 20.

TROCHIDÆ.

Cantharidus hirasei Pils. Page 199. Pl. XXI, fig. 32.

Cantharidus bisbalteatus Pils. Page 199. Pl. XXI, fig. 33.

Clanculus gemmulifer Pils. Page 200. Pl. XXI, fig. 34.

Clanculus hizenensis Pils. Page 201. Pl. XXI, fig. 35.

Some of A. Adams' blanket "descriptions" might cover these species, but none of them indicate the *specific characters* of either of them. The sane judgment of scientific malacologists now demands that a description shall describe.

TURBINIDÆ.

Leptothyra rubra var. *lævicostata* nov.

Shell depressed-globose, coral-red, with pale and red dots alternating on the ribs. Whorls $4\frac{1}{2}$, the last deeply descending anteriorly. Sculpture of about 8 rather strong, almost smooth spiral ribs above and upon the rounded peripheral region, with one or several fine threads in some of the interspaces; 8 to 10 smaller, closer smooth ribs upon the rather flattened base. Alt. hardly 4, diam. 5 mm.

Northern shore of province Tango, western side of Hondo (M. R. Gaines). Types No. 70,794 Coll. A. N. S. P.

Specimens from Mr. Hirase, taken at Hirado, Hizen, vary from coral-red to almost purple, and some of them are rather larger with the spire elevated, the largest measuring alt. 5.2, diam. 5.5 mm.

This form differs from *L. rubra* (Dkr.) in the smoothness of the spiral ribs, which are not rougher than in the Mediterranean *L. sanguinea* (L.), and in the smaller size, *rubra* measuring, alt. scarcely 6, diam. 6 to $6\frac{1}{2}$ mm. In *L. sanguinea* the ribs of the base are not noticeably smaller, as they are in all of the Japanese *Leptothyra*s I have seen. Perhaps this variety is what Dunker and others have reported from Japan as *sanguinea* L.

ACMÆIDÆ.

Acmaea heroldi var. *signata* Pils. Pl. XIX, figs. 10, 11.

See p. 202. Types No. 80,497 Coll. A. N. S. P., from No. 748 of Mr. Hirase's collection.

SOLENIIDÆ.

Solen roseomaculatus n. sp. Pl. XIX, fig. 13.

Shell small, thin, moderately curved, the upper and lower margins parallel, both ends truncated, with rather rounded angles; compressed, open at both ends, glossy and smooth except for faint growth-striæ. White with very irregular, more or less confluent purplish-roseate maculation throughout, the spots coarser toward the distal end. Beaks roseate. Anterior end obliquely truncate, the margins narrowly expanded or flaring, thickened within. A single prominent, erect tooth in each valve, that in the right valve anterior to the other and compressed, that in the left triangular, being buttressed posteriorly.

Length 31, alt. 6.3, diam. 3.8 mm.

Hirado, Hizen, western Kiusiu (Mr. Y. Hirase). Types No. 80,565 Coll. A. N. S. P., from No. 1,044 of Mr. Hirase's collection.

This rose-variegated little *Solen* is curved like an *Ensis*, and has some similarity to *S. pictus* Philippi,¹² *S. vaginoides* Phil.¹³ *non* Lam. = *S. philippianus* Dkr.¹⁴ and *S. aspersus* Dkr.¹⁵ *Solen pictus* is comparatively shorter and markedly inflated or cylindric, while the present Japanese species is strongly compressed. *S. philippianus* measures 66 by a little over 10 mm. ("2'' 8''' lang, und wenig über 5''' hoch"), and is thus a narrower shell, and it is more attenuated anteriorly, with smeared coloration, according to the figure. *S. aspersus* is decidedly more slender, and anteriorly below it is more square-cornered. The proportions of the three species are as follows, the altitude and diameter being compared with the length:

	Length.	Alt.	Diam.	
<i>S. roseomaculatus</i> ,	1	$\frac{1}{5}$	$\frac{1}{8}$	of the length.
<i>S. philippianus</i> ,	1	$\frac{1}{6}$		" "
<i>S. aspersus</i> ,	1	$\frac{1}{7}$	$\frac{1}{10}$	" "
<i>S. pictus</i> ,	1	$\frac{2}{9}$	$\frac{1}{5}$	" "

¹² Philippi, *Zeitschr. f. Malak.*, 1848, p. 174. Habitat unknown. It has not been figured, to my knowledge.

¹³ Philippi, *Abbild. u. Beschreib.*, etc., I, *Solen*, Pl. 1, fig. 3. From New Holland.

¹⁴ Dunker, *Proc. Zool. Soc. Lond.*, 1861, p. 420, under *S. aspersus*.

¹⁵ Dunker, *l. c.*, Australia. The type has been figured in *Conch. Icon.*, XIX, *Solen*, Pl. 7, fig. 33a.

PETRICOLIDÆ.

Petricola cyclus Pils. Pl. XIX, figs. 3, 4.

See p. 204. Types are No. 80,580 Coll. A. N. S. P., from No. 1,199 of Mr. Hirase's collection. It has some merely superficial resemblance to *P. typica* Jonas.

Petricola cyclus var. *sculpturata* Pils. Pl. XIX, fig. 7.

See p. 205. Types are No. 10,130 Coll. A. N. S. P., from Puttalam, Ceylon.

VENERIDÆ.

Venus Hirasei Pils. Pl. XIX, fig. 1; Pl. XX, fig. 20.

See p. 205. Types No. 80,447 Coll. A. N. S. P., from No. 492 of Mr. Hirase's collection. It is curiously like the Panamic *V. columbiensis* Sowb., but differs in having fewer ribs separated by much wider intervals, and a deeper, narrower pallial sinus. The cardinal teeth are more deeply bifid than in *V. columbiensis*. The largest specimen I have seen measures, length 52, alt. 44, diam. $33\frac{1}{2}$ mm. It is from Oyama, Tsushima.

Tapes platyptycha Pils. Pl. XIX, fig. 6.

Page 206. Types are No. 81,218 Coll. A. N. S. P., from No. 1,196 of Mr. Hirase's collection.

Tapes phenax Pils. Pl. XIX, fig. 5.

Page 207. Types are No. 80,436 Coll. A. N. S. P., from No. 432 of Mr. Hirase's collection

DONACIDÆ.

Donax kiusiuensis Pils. Pl. XX, fig. 19.

Page 207. Types are No. 80,505 Coll. A. N. S. P., from No. 847 of Mr. Hirase's collection.

TELLINIDÆ.

Tellina (Merisca) pristiformis n. sp. Pl. XIX, fig. 8.

Shell equilateral, subtriangular, slightly inequivalve, the posterior end being bent to the right; moderately convex, solid, white. Surface dull and lustreless, sculptured with densely crowded fine, concentric lamellæ, a little stronger and more spaced toward the two ends; the intervals sculptured with fine, subobsolete, radial striæ, which are fainter in the middle, and often hardly percepti-

ble anywhere, even with a lens. Beaks somewhat prominent, small and in contact. Anterior end rounded, the slope above straight; posterior slope straight or slightly convex, finely serrate; the posterior end narrowly subrostrate and biangular, the right valve having two prominent posterior keels, the space between them concave, left valve with one posterior keel, a narrow furrow close before it, with a slighter second depression, the basal margin well rounded, ascending and sometimes slightly sinuous behind. Lunule lanceolate, very deeply cut, bounded by acute ridges, that of the right valve rising well above the left, and with a wider excavation. Area also deeply excavated, bounded by keels, the ligament prominent. Interior white, the hinge strong, with two cardinal teeth in each valve, the left anterior tooth and the right posterior bifid. Left valve without laterals, right valve with low, distant anterior and posterior lateral teeth. Hinge-line straight behind the beak, concave in front. Pallial sinus very large, reaching to within a millimeter or two of the anterior adductor scar, confluent with the pallial line below for about half its length. Scars of the cruciform muscle distinct.

Length 38, alt. 29.5, diam. 11.5 mm.

Inland Sea of Japan. Types No. 71,029 Coll. A. N. S. P.

This species is closely related to *T. pristis* Lam. and *T. concentrica* Gld. It has a wider lunule than the former, its bounding keels without the irregularity, "saw" or serration seen in *T. pristis*. The posterior area is more deeply excavated, the posterior keel of the right valve is stronger, and the end is much more bent to the right. The hinge-plate is wider, and the anterior lateral tooth is further removed from the cardinals. Finally, the dorsal slopes are steeper, meeting at a smaller angle, and hence the whole outline is more triangular. In *T. concentrica* Gld. (Fiji Islands) the form is more elongate, the lunule and posterior area far less impressed, and the interior is more glossy, with shallower, less distinct muscular scars, and the shell is thinner. *T. diaphana* Desh. differs by having the pallial sinus abut against the anterior adductor scar, according to Deshayes' description. *T. siamensis* v. Martens is a longer, less high species, by the description. It has not been figured, so far as I can learn, and is doubtfully distinct from *T. diaphana* Desh.

ANATINIDÆ.

Anatina impura Pils. Pl. XIX, fig. 9.

Page 208. Types are Nos. 68,536 and 70,812 Coll. A. N. S. P.

LIMIDÆ.

Lima hians var. **hirasei** Pils. Pl. XIX, fig. 12.

Page 209. Types No. 80,525 Coll. A. N. S. P., from No. 901 of Mr. Hirase's collection.

Closely allied to *L. hians* Gm. of Europe, but the sculpture is finer, the gape of both ends less widely open, and the anterior rib inside is not so strong.

ARCIDÆ.

Arca nipponensis Pils. Pl. XIX, fig. 2.

See p. 209. Types are No. 79,009 Coll. A. N. S. P.

*Land and Fresh-water Species.***PUPIDÆ.**

Buliminus reinianus var. **hokkaidonis** nov.

Similar to *reinianus* except in being shorter and broader, with very obtuse apex, the upper part of the spire broader. Whorls 8. Length 23, diam. above aperture 8, longest axis of aperture 9 mm.

Kayabe and Shukunobe, prov. Ojima, Hokkaido.

Typical *B. reinianus* is not known from Hokkaido Island. I now believe that it will be difficult, if indeed practicable or desirable, to distinguish *extorris* or *omiensis* as races distinct from the variable *reinianus*, though typically the forms are separable. There is also a rather small and more striate form of the species occurring at Okinoshima and some other places in Shikoku Island, but I have not seen enough specimens to be satisfied that it requires varietal distinction.

HELICIDÆ.

Mandarina mandarina var. **ponderosa** nov.

Shell large and very heavy, reddish-brown or purple-black with a light umbilical patch; whorls $5\frac{1}{2}$, the last one *distinctly carinated* at the periphery. Surface coarsely decussate, the impressed spiral lines being much stronger than in the typical form. Alt. 21, diam. 28 mm.; alt. 19, diam. 26 mm.

Ogasawara (Bonin) Islands (Mr. Y. Hirase). Types No. 80,812 Coll. A. N. S., from 467*b* of Mr. Hirase's collection.

As yet we know nothing of the distribution of species on the several islands of this little group, the investigation of which will be of the greatest interest. We look to Mr. Hirase to throw light upon it.

Trishoplita dacostæ var. *awajiensis* nov.

Shell depressed-conoid, thin, hardly glossy, corneous with a faint brown tint, often in streaks, paler or a little whitish below the sutures. Spires somewhat elevated; whorls $5\frac{3}{4}$, the last obtusely subangular in front. Sculpture of slight, rather irregular growth-striae, a strong lens showing some almost obsolete spiral striae near the umbilicus. Aperture oblique, short-oval, almost round, a little excised by the parietal wall. Peristome thin, narrowly expanded and subreflexed. Alt. 6.2, diam. 9 mm.; width of umbilicus about 1 mm.

Anaya, Awaji Island (Mr. Y. Hirase, No. 643).

This form is duller, more conoidal, with the last whorl more depressed than *T. goodwini* var. *kyotoensis*. It is smaller than *T. dacostæ*, with the aperture less rounded. It is the first *Trishoplita* known from Awaji Island.

Trishoplita goodwini var. *strigata* nov.

Shell similar in general characters to *T. goodwini*, but rather faintly streaked obliquely with brown on a whitish corneous ground, usually whitish below the suture. Finely obliquely striate, and *densely decussate* by close spirals. Whorls $5\frac{3}{4}$ to 6. Alt. $9\frac{1}{2}$, diam. 13, width of umbilicus $1\frac{1}{2}$ mm.

Hirado, Hizen, in western Kiusiu (Mr. Y. Hirase). Type, No. 78,844 Coll. A. N. S. P., No. 344 of Mr. Hirase's collection.

This form was recognized as somewhat different from the typical *T. goodwini* of Hondo, when received from Mr. Hirase about a year ago; but I did not then think it desirable to distinguish it by name. Since such forms of *goodwini* as *tosana* and *dacostæ* have been so distinguished, it would seem advisable to recognize this also. Upon the whole, it is well to have names for these subspecies, which have become differentiated in various areas of the empire. *T. goodwini* var. *strigata* differs from *tosana* and *dacostæ* by its decussate surface.

ZONITIDÆ.

Kaliella suberenulata n. sp.

Shell narrowly perforate, depressed-trochiform, pale brown, somewhat translucent. Sculpture of very fine, close, thread-like striæ and subobsolete spiral striæ; the base smooth. Spire conic, the apex obtuse. Whorls 4, nearly flat, the last acutely carinate in the middle, the carina smooth-edged; base very convex. Aperture narrow, somewhat rhombic; peristome simple. Alt. 1.5, diam. 2.4 mm.

Kochi, Tosa, Shikoku Island (Mr. Y. Hirase).

Similar to *K. crenulata* Gude, but much more depressed. It occurred with specimens of *K. crenulata* (Gude), and an elevated variety of *K. multivolvis* Pils.

K. ruida Pils. is a larger and more coarsely sculptured but evidently allied species.

Kaliella lioderma n. sp.

Shell perforate, pyramidal with flattened base, obtuse apex and straight lateral outlines; pale yellowish-corneous. Whorls 7, rather convex, the last acutely carinate, somewhat convex below. Surface glossy, *smooth* except for slight growth-striæ. Aperture basal, rhombic, nearly twice as wide as high; peristome simple, the margins remote, the columellar margin reflexed. Alt. 2.5, diam. 2.2 mm.

Kashima, Harima (Mr. Y. Hirase).

More elevated than *K. crenulata*, and distinguished by its plain, smooth surface.

Kaliella harimensis n. sp.

Shell perforate, obtusely conoidal, fragile, amber colored, translucent. Whorls 5, *convex*, slowly increasing, the nucleus rather large; last whorl obtusely subangular in front, elsewhere rounded at the periphery, the base convex. Sculpture of extremely fine, densely crowded, thread-like striæ above, giving the surface a somewhat silken lustre; almost obsolete on the glossy base, which shows weak spiral striæ near the middle. Aperture truncate-crescentic, the peristome thin, a little reflexed at the perforation. Alt. 2, diam. $2\frac{1}{2}$ mm.

Kashima, Harima (Mr. Y. Hirase, No. 655).

This species is much more depressed than the allied *K. pagoduloides* Gude. It has not the peripheral keel of *K. fraterna* Pils.

REALIIDÆ.

Omphalotropis japonicus n. sp.

Shell narrowly umbilicate, acutely ovate-conic, rather thin, yellowish brown; surface glossy and smooth. Spire straightly conic, the apex rather acute. Whorls 6, convex, the last with a strong basal keel around the umbilicus. Aperture slightly oblique, ovate, the outer and basal margins of the peristome a trifle expanded, columellar margin reflexed. Length 5.3, diameter 3.5, length of aperture 2.5 mm.

Kashiwashima, Tosa, Shikoku Island (Mr. Y. Hirase, No. 588). This is, I believe, the first *Omphalotropis* found in Japan.

AMNICOLIDÆ.

Bithynia striatula var. *japonica* nov.

Shell pale amber tinted or corneous, glossy, similar to *B. striatula* of China, but differing in sculpture, the spiral ridges being much stronger; 3 or 4 large and irregularly spaced ones above the periphery, those on the base smaller and closer. Alt. 10 (specimens with the early whorls lost by erosion), diam. 6.5 mm.; longest axis of aperture 5 mm.

Manabe, Hidachi (type locality), and Osaka (Mr. Y. Hirase).

Types No. 80,683 Coll. A. N. S., from No. 152 of Mr. Hirase's collection.

Specimens from Osaka have less strong sculpture than those from the province Hidachi, though it is still stronger than in any Chinese specimens of *B. striatula* in the series before me. The peristome is rather less expanded, too, though well thickened in adults, and either black (Manabe) or pale (Osaka). *B. striatula* has already been reported from Japan by Prof. von Martens,¹⁶ who in 1860 found it at Yokohama, on the muddy bank of the small river, at the first bridge, in quite fresh water. I suppose it was this strongly sculptured form which he found. The Vega Expedition collected shells identified by Westerlund as *B. striatula* at Jokogava (near Tokyo), and at Lake Biwa (*Vega Exp.*, IV, p. 182). In China the species is widely diffused, from the Yangtse to the Amur drainages; and Pére Heude¹⁷ has split it into some four species. Of

¹⁶ *Sitzungsber. naturf. Freunde zu Berlin*, 1877, p. 114. *B. striatula* was described from Chusan, as *Paludina (Bithynia) striatula* Bens., *Journ. Asiat. Soc. Beng.*, XXIV, 1885, p. 131. Schmacker found it at Shanghai.

¹⁷ *Mémoires concernant l'Hist. Nat. de l'Empire Chinois*, pp. 171, 172.

these his *B. chinensis* seems to me to be typical *B. striatula*, while *B. spiralis* is a more slender, *B. scalaris* a stouter form, perhaps not more than varietally distinct. *B. striatula* Bens. of Heude is a strongly keeled form, certainly not the typical *striatula* of Benson. His identification of it was possibly due to a remark of von Martens in *Jahrb. D. Mal. Ges.*, II, 1875, p. 133.

I have no great faith in the distinctness of any of these supposed species; but if several Chinese forms are to be distinguished, the Japanese shells evidently deserve at least varietal rank. They are nearer *B. striatula* Heude *non* Benson than to any other of the Chinese varieties.

SPHÆRIIDÆ.

Sphærium inutilus n. sp.

Shell oval, much inflated, thin, equilateral, grayish-brown, with a pale basal zone; glossy, minutely striate; anterior end curved in a semicircle; posterior end a little more obtuse, though still well curved. Beaks small, projecting, "calyculate," or tipped with a distinctly demarked protoconch. Interior bluish-white; cardinal teeth subobsolete, extremely compressed, parallel with the hinge-line, divided in the right valve, single in the left; lateral teeth moderately strong, double in the right, single in the left valve. Length 10, alt. 8.6, diam. 6.2 mm.

Nishigo, Uzen (Mr. Y. Hirase).

Three species of *Sphærium* are now known from Japan: *S. japonicum* Westerlund,¹⁸ *S. heterodon* Pilsbry,¹⁹ and the present species. All belong to the subgenus *Calyculina*. *S. japonicum* is an elongate "subtrapeziform" species. *S. inutilus* differs from *S. heterodon* in having higher beaks, a more curved hinge-line, rounded ends and it is more globose.

No *Pisidium* or *Cyrena* is yet known from Japan proper, although the latter genus occurs in the middle group of the Loo Choo Islands.

CYRENIDÆ.

Corbicula sadoensis n. sp.

Shell triangular-oval, moderately inflated, solid; glossy, nearly black in adults, sculptured with very close, irregularly raised and

¹⁸ *Calyculina japonica* West., *Nachr'bl. d. D. Malak. Ges.*, 1883, p. 58 (April); *Vega Exp.*, IV, p. 216, Pl. 6, fig. 31, from Jokogava, near Tokyo.

¹⁹ *Catal. Mar. Moll. Jap.*, p. 159, Pl. 3, figs. 15, 16, 17, from Hizen, in Kiusiu.

thread-like concentric striæ. Beaks moderately raised and full, deeply eroded in adults. Interior whitish, or light violet outside of the pallial line. Hinge rather narrow, the cardinal teeth slightly grooved at their summits; anterior and posterior laterals of equal length, single in the left, double in the right valve. Length 33, alt. 27, diam. 18 mm.

Sado, Japan (Mr. Y. Hirase).

It fills me with sadness to add another *Corbicula* to the Japanese fauna, but these specimens cannot without violence be referred to any of those known. *C. martensi* Clessin is perhaps the nearest, but *sadoensis* is more transverse, the lateral teeth diverge at a wider angle, and the striæ are far closer. The very close, comparatively fine striation is the chief differential character of the species, distinguishing it from all the other forms.

Corbicula awajiensis n. sp.

Shell oval, compressed, the diameter about half and the alt. three-fourths the length, bright yellowish green, with buff spots and patches toward the beaks; strongly and regularly ribbed concentrically. Beaks rather low, not projecting much, eroded and deep violet. Nearly equilateral, the anterior end sometimes slightly narrower, the two ends about equally rounded, upper and lower margins equally and similarly curved. Interior dark violet, with a darker, often light-bordered spot under the beaks. Hinge delicate, the cardinal teeth small; anterior and posterior laterals of about equal length, somewhat curved, very strongly crenulate, double in the right, single in the left valve. Length 16, alt. 12, diam. $8\frac{1}{2}$ mm.

Noda, Awaji (Mr. Y. Hirase).

The valve-margins viewed from within are seen to form a symmetrical oval figure, the upper and lower borders having almost exactly the same curvature, and the anterior and posterior ends being about equal. There is no suggestion of the subtriangular shape of most Japanese species of *Corbicula*. The beaks are low and the sculpture strong and regular. It is a small species, the first known from Awaji Island, and seems quite distinct from any other.

EXPLANATION OF PLATES XIX, XX, XXI.

PLATE XIX (figures natural size), Fig. 1.—*Venus hirasei*, pp. 205, 400.

Fig. 2.—*Arca nipponensis*, pp. 209, 402.

Figs. 3, 4.—*Petricola cyclus*, pp. 204, 400.

Fig. 5.—*Tapes phenax*, p. 207.

Fig. 6.—*Tapes platyptycha*, p. 206.

Fig. 7.—*Petricola cyclus* var. *sculpturata*, p. 205 (Ceylon).

Fig. 8.—*Tellina pristiformis*, p. 400.

Fig. 9.—*Anatina impura*, pp. 208, 402.

Figs. 10, 11.—*Acmæa heroldi* var. *signata*, p. 202.

Fig. 12.—*Lima hians* var. *hirasei*, pp. 209, 402.

Fig. 13.—*Solen roseomaculatus*, p. 399.

Figs. 14, 15.—*Cerithium chemnitzianum*, p. 393.

Fig. 16.—*Echinella cumingi luchuana*, pp. 198, 394.

Fig. 17.—*Euthria kokkaidonis*, p. 389.

Fig. 18.—*Peristernia ustulata* var. *luchuana*, pp. 197, 390.

PLATE XX (fig. 19 much enlarged, the others natural size), Fig. 19.—*Donax kiusiuensis*, p. 400.

Fig. 20.—*Venus hirasei*, p. 400.

Fig. 21.—*Chrysodomus intersculptus* var. *frater*, pp. 197, 391.

Fig. 22.—*Buccinum hirasei*, p. 391.

Fig. 23.—*Chrysodomus pericochlion*, p. 391.

PLATE XXI (figures much enlarged), Fig. 24.—*Tritonidea submenkeana*, p. 387.

Fig. 25.—*Syrnola bacillum*, p. 394.

Fig. 26.—*Daphnella fragilis* var. *articulata*, p. 385.

Fig. 27.—*Turbonilla varicifera*, pp. 198, 395.

Fig. 28.—*Mitra vanattai*, p. 387.

Fig. 29.—*Eulima luchuana*, p. 396.

Fig. 30.—*Eulima dunkeriana*, p. 395.

Fig. 31.—*Mitra hizenensis*, p. 386.

Fig. 32.—*Cantharidus hirasei*, p. 199.

Fig. 33.—*Cantharidus bisbalteatus*, p. 199.

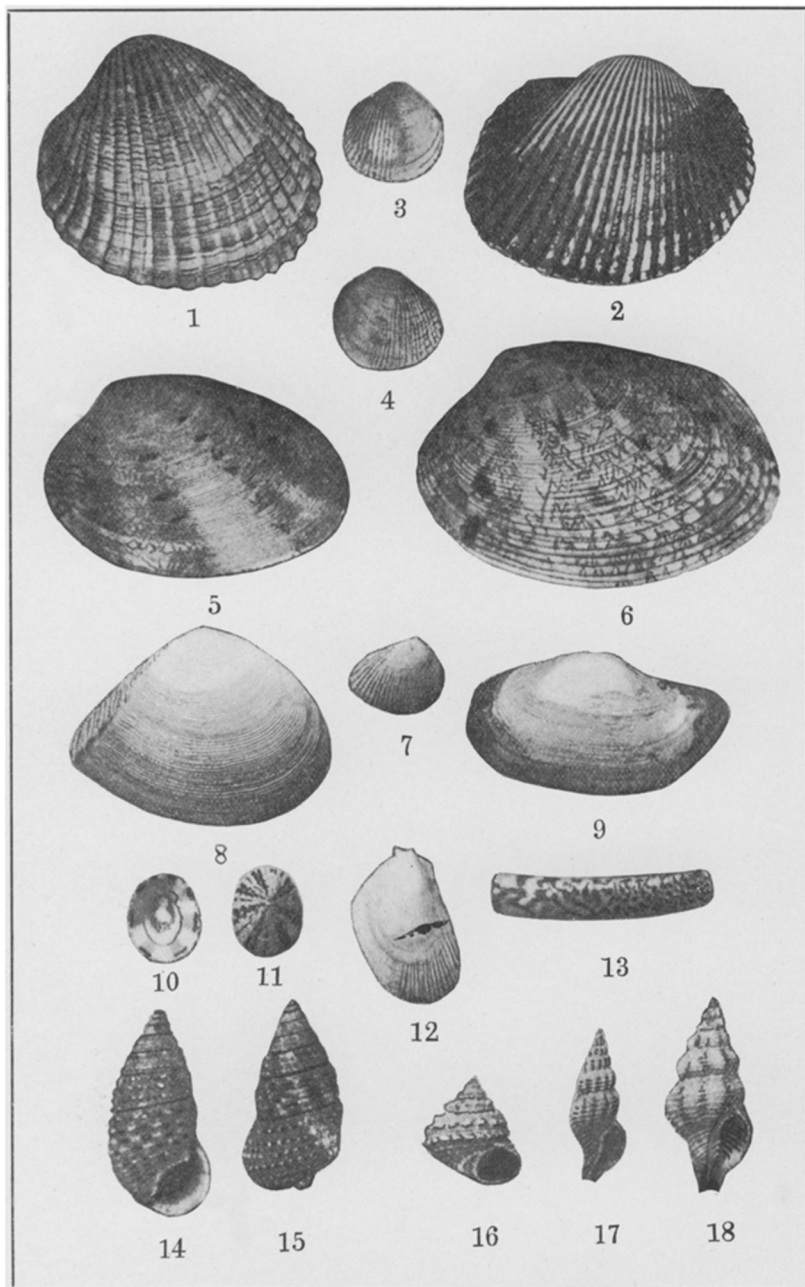
Fig. 34.—*Clanculus gemmulifer*, p. 200.

Fig. 35.—*Clanculus hizenensis*, pp. 201, 398.

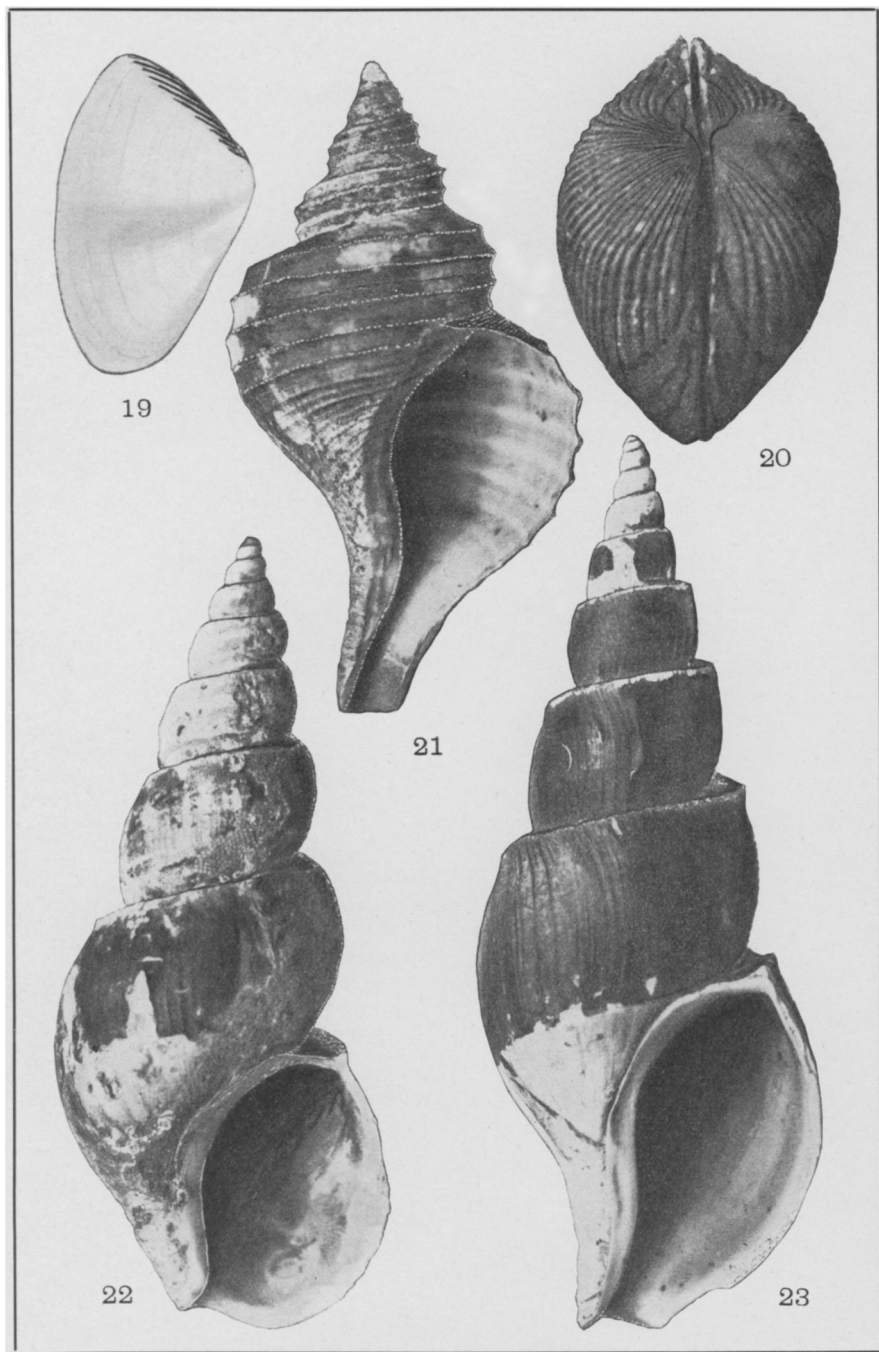
Fig. 36.—*Columbella misera* var. *californica*, p. 390.

Figs. 37, 38.—*Columbella misera*, p. 389.

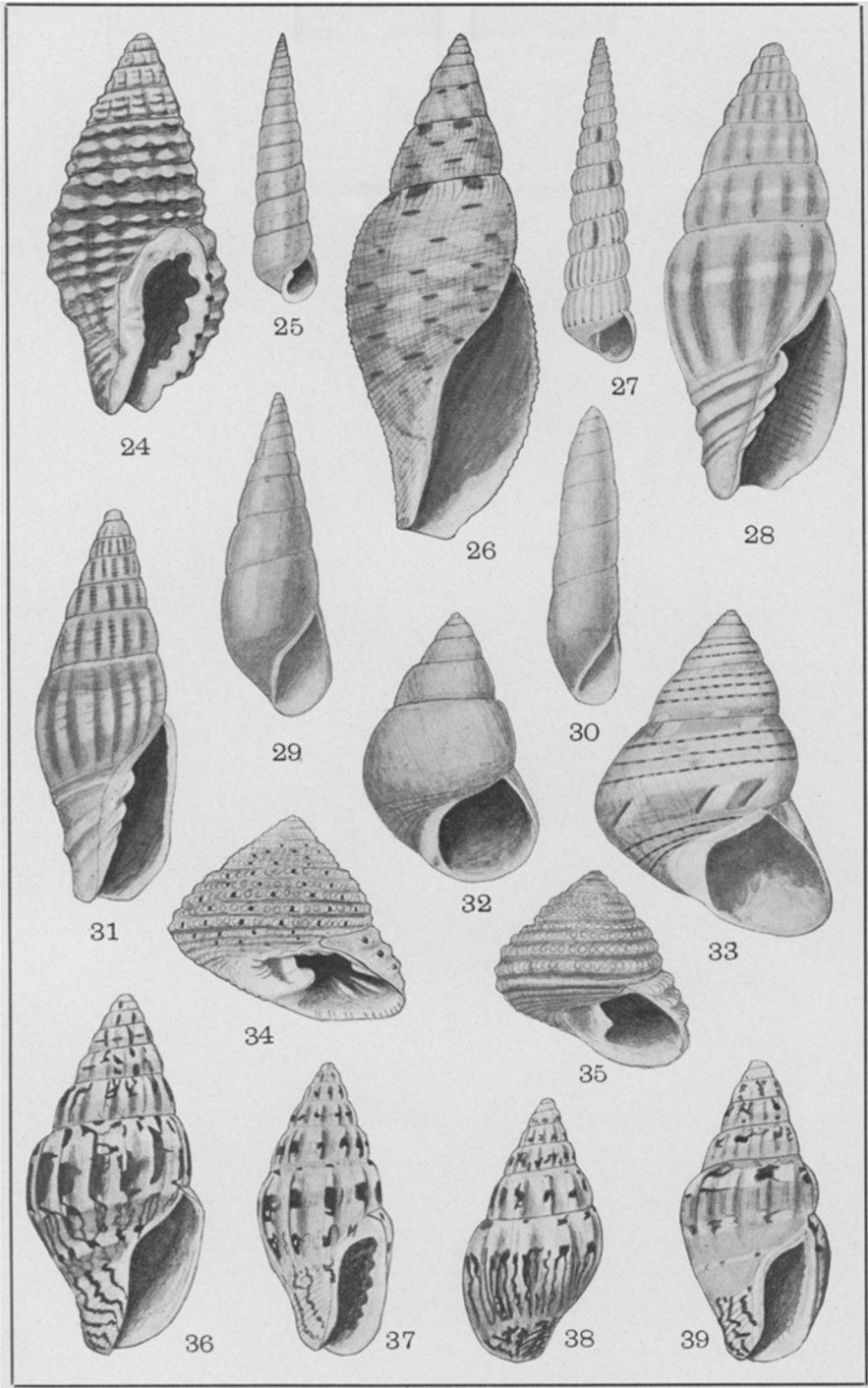
Fig. 39.—*Columbella misera* var. *polynyma*, pp. 196, 390.



PILSBRY. NEW JAPANESE MOLLUSCA.



PILSBRY. NEW JAPANESE MOLLUSCA.



PILSBRY DEL.

PILSBRY. NEW JAPANESE MOLLUSCA.